

Light

Light is a form of energy that cause vision.

There are other forms of energy

Sound energy

heat energy

potential energy

electric energy

* the light energy is the only one who can be seen is called ((the visible spectrum)).

the visible spectrum

It is the light energy that can be seen.

Sources of light

Natural Sources

Sun



Artificial Sources

Electric lamp
Lightened candles
Kerosene lamps.

The properties of light

First : Traveling of light in straight lines.

Second: transmitting of light through different materials

Third: Light reflection.

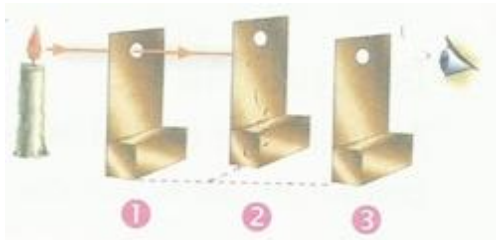
Fourth: light refraction.

Fifth: Light separation (Splitting).



First: traveling of light in straight lines.

Activity 1 to prove that light travels in straight lines.



As light travel in straight lines , some phenomena happen as:

1- Formation of images through narrow holes.



Activity 2

A minimized and inverted image for the candle is formed on the semi-transparent paper due to traveling light in straight lines.

**** the idea of photographic camera.**

2- formation of Shadow.



Activity 3

Formation of shadow due to traveling light in straight lines.

**** shadow** is the darkened area which is formed as a result of falling light on an opaque object.

****shadow area is changed by changing the position of the object.**

****The nearer object to the light source has the bigger shadow.**



Laser is a light beam that travels long distances without fainting.

Laser lights are used in means of communication, medicine and computers.

Second: Transmitting of light through different materials

Light transmits through different materials with variable degrees.

Materials classified to



a. Transparent material	<p>It is the material which allows most light pass through and objects can be seen clearly through it.</p> <p>Examples</p> <ul style="list-style-type: none">- clear glass, glass cup , Air , transparent plastic , clear water.
b. semi-transparent material	<p>It is the material which allows some light pass through and objects can be seen through it less clearly than transparent one.</p> <p>Examples</p> <ul style="list-style-type: none">- frosted light bulbs. , tissue paper.
c. Opaque material	<p>It is the material that doesn't allow light to pass through and objects cant be seen through it.</p> <p>Examples</p> <ul style="list-style-type: none">- Rocks, Aluminum foil ,Wood, Books,,,,,

Our bodies are opaque materials!!!! As they don't allow light to transmit



Third: The light reflection.

Light reflection: It is the bouncing (returing back) of light rays when light falls on a surface.

Factors necessary for light reflection:

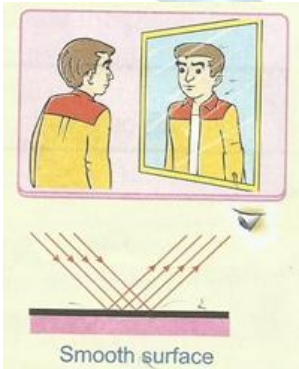
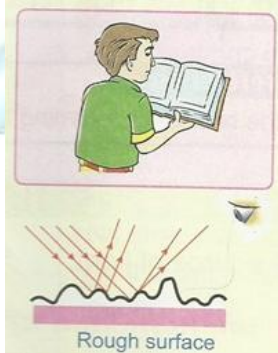
1- A source of light

2- A reflecting surface.

** We can't see in dark because there is no light to fall on objects and reflects to our eyes causing vision.

** The moon seems luminous because it reflects the sunlight that falls on its surface

Light reflection can be divided into

Regular reflection	Irregular reflection
It is the reflection of light on a smooth and shiny reflecting surface , where the light rays are reflected directly in one direction.	It is the reflection of light on a rough reflecting surface, where the light rays are reflected and scattered in different directions.
 <p>Smooth surface</p>	 <p>Rough surface</p>
** reflection of light when it falls on a mirror surface. ** reflection of light when it falls on a glass surface.	Reflection of light when it falls on any rough surface as a piece of white paper (which contains protrusions and tiny holes).

Fourth: Light refraction

The pen seems broken at the water surface.

This phenomenon is due to the refraction (change in direction) of the light rays.



Light refraction:

It is the change in the direction of the light rays when light passes through the separating surface between two transparent media due to the change in the light speed.

** the light speed through air is faster than that through water.

Question??

Spoon appears broken when you put it in a transparent cup of water??

Due to the refraction of light.

Fifth: Separation of light.

Separation of light:

It is the separation of white light into seven colors called spectrum colors.

Activity

** face **glass prism** to sunlight , then move the prism until you receive the sunlight coming from it on the white paper.

** Seven spectrum colors are formed on the paper which are **Red, Orange, Yellow, Green, Blue, Indigo, Violet**

** Rainbow is produced when sunlight passes through the drops of rain water during the rainfall, so the drops of rain water act as a prism.





Questions on lesson!!!

COMPLETE THE FOLLOWING STATEMENTS:

- 1- light is a form of
- 2- is the light energy that can be seen.
- 3- The moon seems luminous because it the sunlight.
- 4- from the sources of light....., and
- 5- light travels in lines.
- 6-, and are from the properties of light.
- 7- the idea of the camera depends on
- 8- shadow is a Area that is formed due to the traveling of light in
- 9- the nearer object to the light source has the shadow.
- 10- Materials can be classified according to their ability to transmit light into, And materials.
- 11- the material which allows most light to transmit through is called
- 12- lets some light pass through and we can see objects through it less clearly.
- 13- the glass cup is an example of Materials, while a piece of rock is an example of Materials.
- 14- light bouncing after falling on an object is called.....
- 15- we can see objects around us when falls on them, then it to reach our eyes.
- 16- the presence of And are from the necessary factors for light reflection.
- 17- in the, the light rays are reflected directly in one direction.
- 18- in the, the light rays reflected and scattered in different directions.
- 19- light when it falls on a mirror , while it When it passes from water to air.
- 20- light when it passes from one transparent medium to another.
- 21- white light is formed of Spectrum colors.
- 22- we see the in the sky after rainfall.
- 23- in spectrum colors, the color lies between the red color and the yellow color.
- 24- sunlight is separated into colors by passing it through a
- 25-, orange,, green, blue , and violet are the seven spectrum colors.

CHOOSE THE CORRECT ANSWER:

1 - is from light sources.

A: electric lamp. B. lightened candles. C. sun d. all previous answers.

2 - light transmit in lines.

A: curved b. broken c. straight d. zigzag.

3 - the image of object that is formed by camera is

A: inverted b. minimized c. enlarged d. a and b

4 - when light falls on an opaque body , Is formed.

A: no image b. white light c. a shadow d. an inverted image.

5 - the farther object to the light source has the Shadow.

A: bigger b. smaller c. faded d. all the previous.

6 - materials don't allow light to travel through.

A: transparent b. translucent c. semi-transparent d. opaque.

7 - we can see objects due toof light on them.

A: reflection b. refraction c. shadow d. spectrum colors.

8 - Light is reflected When it falls on a smooth bright surface.

A: regularly b. irregularly c. and refracted d. and scattered.

9 - a pencil seems broken when it is placed in a glass cup of water due to the of light.

A: reflection b. refraction c. separation d. absorption.

10 - the glass prism separates the white light into spectrum colors.

A: seven b. six c. eight d. ten

GIVE REASON FOR:

1 - the formation of images through narrow holes?

.....

2 - a tissue paper is a translucent material?

.....

3 - you can see your image in a plane mirror?

.....

4 - seeing the pen bending in a transparent cup of water?

.....

WHAT HAPPEN WHEN:

1 - you place an opaque object between a light source and a screen?

2 - you look at a picture through a metallic sheet?

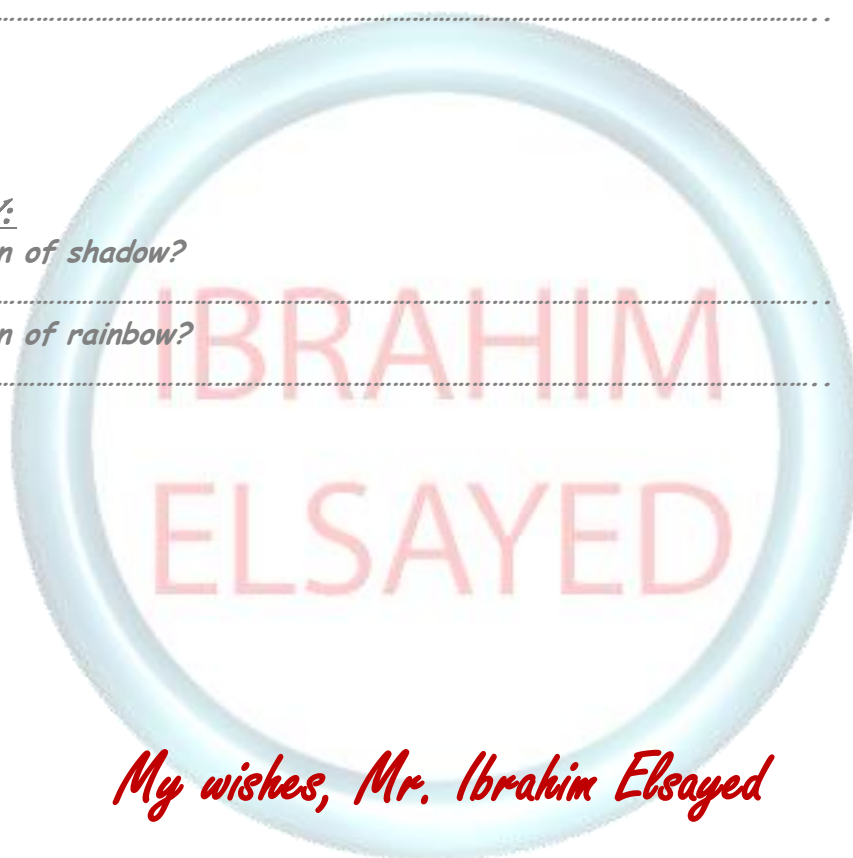
3 - you look at a spoon that is put in a beaker containing water?

4 - white light passes through a prism?

EXPLAIN BRIEFLY:

1 - the formation of shadow?

2 - the formation of rainbow?



My wishes, Mr. Ibrahim Elsayed

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